

CLAIMS

We claim:

1. A fusion polypeptide comprising from the N-terminus:
 - a) a C-terminal intein motif;
 - b) a peptide; and
 - c) an N-terminal intein motif.
2. A fusion polypeptide according to claim 1 wherein said intein has altered cyclization activity as compared to the wild-type intein.
3. A fusion polypeptide according to claim 1 wherein said peptide is a random peptide.
4. A fusion polypeptide according to claim 1 wherein said peptide is derived from a cDNA library.
5. A fusion polypeptide according to claim 1 further comprising a reporter protein.
6. A fusion polypeptide according to claim 5 wherein said reporter protein is fluorescent protein selected from the group consisting of green fluorescent protein, blue fluorescent protein, yellow fluorescent protein, and red fluorescent protein.
7. A fusion polypeptide according to claim 5 wherein said reporter protein is a transcription factor.
8. A fusion polypeptide according to claim 1 further comprising a fusion partner.
9. A library of fusion polypeptides according to claim 1 or 6.
10. A fusion nucleic acid comprising from 5' to 3':
 - a) nucleic acid encoding a C-terminal intein motif;
 - b) nucleic acid encoding a peptide; and
 - c) nucleic acid encoding an N-terminal intein motif.
11. A retroviral vector comprising the fusion nucleic acid of claim 10.
12. A method of making a cyclic peptide in vivo comprising providing a cell comprising a fusion nucleic acid comprising from 5' to 3':

a) nucleic acid encoding a C-terminal intein motif;
b) nucleic acid encoding a peptide; and
c) nucleic acid encoding an N-terminal intein motif;
under conditions whereby a cyclic peptide is formed.

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13. A method according to claim 12 further comprising transforming said cell with said fusion nucleic acid.

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14. A method according to claim 12 wherein a library of cells comprising a library of fusion nucleic acids is provided.

V, 15. A method comprising:

- a) introducing an intein-catalyzed cyclic peptide library into a cell; and
b) screening for an altered phenotype.

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VI 16. A method for identifying target molecules comprising:

- a) introducing an intein-catalyzed cyclic peptide library into a cell;
b) screening said cell for an altered phenotype; and
c) isolating target molecules that bind to the cyclic peptide.

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17. An intein-catalyzed cyclic peptide library comprising:

- a) an intein;
b) a random peptide of at least 3 amino acids in length; and
c) a reporter protein.

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VII 18. A library according to claim 17 wherein said intein is a mutant intein with altered cyclization efficiency.

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